Customer Segmentation in the Insurance Industry: Present and Future

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국 문 요 약

고객을 세분화하여 맞춤화된 서비스를 제공하는 것은 고객 관계 관리에 있어 중요하다. 빅데이터 분석 기법과 기계 학습 등을 활용한 분석 기법의 발전은 더욱 세밀한 고객 세분화를 가능케 했다. 하지만 새로운 분석 기법을 기업에서 효과적으로 적용하는 것은 여러 어려움이 존재한다. 본 연구는 특히 국내 보험 산업에서 데이터 분석 기법을 활용해 더욱 향상된 고객 세분화를 수행할 수 있는 방법에 대해 논의한다. 이를 위하여 실제 보험 설계사와의 심층 인터뷰를 통해 국내 보험 회사의 현상을 파악하고, 이를 기반으로 보험 산업에서 활용할 수 있는 가이드라인을 제시하고자 한다.

핵심어: 고객 관계 관리, 고객 세분화, 고객 분류, 인공지능

Ⅰ. Introduction

The finance industry is well known to rely on digital technology for its efficient operation, new product development, and customer management. By digitalizing most of its operations, big data can be acquired more effortlessly than ever before, allowing companies to apply artificial intelligence technology to increase competitiveness.

While conducting FGI(Focused Group Interview) with customer service managers/sales agents working on the frontline of the Korean insurance field, we have found that insurance companies are heavily relying upon individual's heuristic-based customer segmentation standards rather than segmentation driven from the legacy data-based approach. We can presume that there may be some obstacles that are disturbing to the companies before successfully applying an AI-based customer segmentation system. Thus, a standard approach will help problem description, data transformation, and model evaluation(Wirth & Hipp, 2000). Therefore, we propose a framework and application guideline for AI-based customer segmentation in the insurance sector.

Ⅱ. Related Work

2.1. Customer Segmentation

Customer segmentation has been studied extensively in customer relationship management in the finance industry. One example is Namvar et al.(2010) structured framework. Their model was developed to apply RFM(Recency, Frequency, and Monetary) and customer's LTV(Lifetime Value) into customer segmentation models. Their work utilizes demographic data from the banking industry. K-Means

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clustering technique and SOM(Self-Organizing Map) method are applied.

Note that, in the insurance industry, rapid environmental change is common, and customers expect a higher level of service, which naturally leads to fierce competition between companies to increase customer experience. Applying the AI-based customer segmentation method can be an ideal solution in this situation. However, we have noticed that most of the prior studies are condensed in the banking sector or focused upon customer attrition aspects only.

2.2. Financial Decision

Various theoretical factors may comprise customers' financial decisions, especially insurance services selection. Representatively: expected return and risks, experiential knowledge, informativeness, reliability, and degree of involvement.

Prior studies related to risk focus on risk aversion and wealth. According to Campbell(2006), individuals with more wealth showed low-risk aversion, while those with less wealth showed higher risk aversion. Min & Song(2014) presented that experience is the primary variable used in allocating financial assets. From the experiment result by Joo(2011), individuals over 50 years old showed a tendency to rely on information provided by financial companies or sales associates when making financial product purchase decisions. Anderson(1982) proved evidence that the importance of the head office is one of the significant essential factors when consumers decide which finance branch to choose. Bae(2004) examined financial services that distinguish consumers and provide different marketing strategies from a corporate perspective.

Ⅲ. Conclusion

3.1. Current Practice

To explore the current practice of the insurance industry of Korea, we conducted interviews with ten customer service managers/sales agents working for multiple insurance companies in Korea. Note that there is no clear distinction between service managers and sales agents in Korea; they

usually perform both roles simultaneously. In other words, they contact customers to sell insurance products and, at the same time, assist customers with various questions and concerns.

The interviews reveal that most agents have their heuristics in customer segmentation, but the heuristics are based on their personal experiences. This makes their customer management methods subjective, making it hard to deliver, share, and transfer to other agents. Another shortcoming is that the heuristics were derived from a small sample of customers(e.g., forty customers), making it vulnerable to generalization.

3.2. CRISP–DM Model

The CRISP-DM(Cross Industry Standard Process for Data Mining) model is a comprehensive process model for data mining projects(Wirth & Hipp, 2000). It provides an overview of the life cycle of a data mining project. Built on previous knowledge discovery methodologies, the model breaks down the life cycle of a data mining project into six phases: business understanding, data understanding, data preparation, modeling, evaluation, and deployment. Figure 1 shows the six phases and their dependencies. Note that the sequence of the phases is not strict, and the arrows only indicate the most important and frequent dependencies among the phases. A brief description of each phase is as follows.
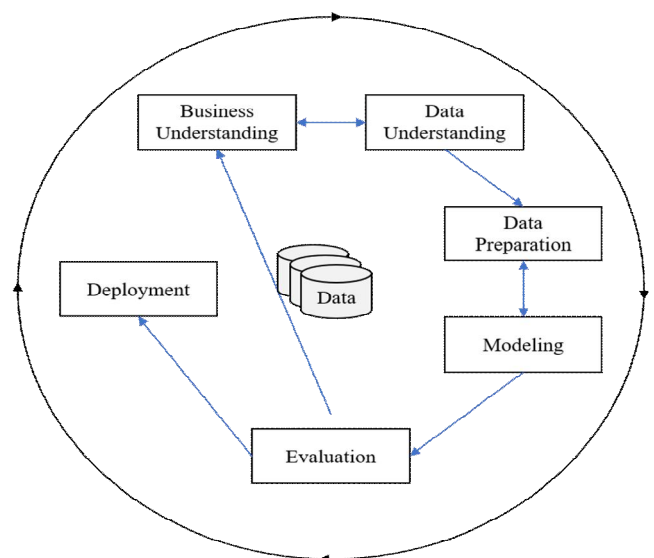
<Figure 1> Phases of the CRISP-DM Process Model

1. Business Understanding: to understand the project objectives and requirements

2. Data Understanding: to get familiar with the data, to identify data quality problems, or to discover first insights into the data

3. Data Preparation: all activities to construct the final dataset

4. Modeling: to select and apply modeling techniques and to optimize model parameters

5. Evaluation: to evaluate the model more thoroughly and review the model construction steps.

6. Deployment: to gain knowledge from the user, to organize and present the knowledge

3.3. Discussion

Drawing on the CRISP-DM framework, we propose a customer segmentation framework for the insurance industry. Our framework consists of six main steps(or phases) and focuses on customer segmentation for better customer relationship management.

In business understanding phase, we suggest interviews with customers and sales agents for comprehending the domain . Data for customer segmentation in the insurance sector contains extensively privacy-sensitive information. If needed, insurance companies can gain detailed knowledge of their customers with direct communication methods.

The format of the data should be decided before constructing the final dataset. Two representative formats are wide format and long format. We recommend constructing the final dataset in a long format. Methods like Affinity Propagation, DBSCAN(Density-Based Spatial Clustering of Applications with Noise), K-means, or mean shift can be used to employ the clustering algorithms.

The evaluation step is essential to convince end users of the segmentation model(i.e., sales agents and service managers).

By conducting a pilot test, resistance can be reduced. End users should learn how to use the customer segmentation

model and how it works. The creation of the model is not the end. After deploying the model, feedback from the users can be used to improve the model.

This research will benefit future studies concerning AI-based data mining projects in insurance companies. If actual insurance customer data can be acquired, empirical research would be possible. We will be able to better understand insurance customers in terms of their characteristics, preference, and behaviour through empirical studies.

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